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Docket No.: 5000-0183PUS1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Jordi TORMO I BLASCO et al.

Application No.: 10/585,741

Confirmation No.: N/A

Filed: July 12, 2006

Art Unit: N/A

For: FUNGICIDAL MIXTURES FOR
CONTROLLING HARMFUL FUNGI

Examiner: Not Yet Assigned

LETTER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Subsequent to the filing of the above-identified application on July 12, 2006, attached hereto is an English Translation of the International Preliminary Report on Patentability issued by the International Bureau on behalf of the International Searching Authority. Please make this document of record for the above-identified application.

Application No.: 10/585,741

Docket No.: 5000-0183PUS1

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or to credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Dated: November 29, 2006

Respectfully submitted,

By 

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Attachment(s)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 0000055259	FOR FURTHER ACTION	See item 4 below
International application No. PCT/EP2005/000257	International filing date (<i>day/month/year</i>) 13 January 2005 (13.01.2005)	Priority date (<i>day/month/year</i>) 15 January 2004 (15.01.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant BASF Aktiengesellschaft		

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> .1(a).																								
2.	This REPORT consists of a total of 10 sheets, including this cover sheet. In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																								
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 80%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

<p style="text-align: center;">The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No. +41 22 338 82 70</p>	<p>Date of issuance of this report 03 October 2006 (03.10.2006)</p> <p>Authorized officer Agnes Wittmann-Regis e-mail: pt06@wipo.int</p>
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PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing (day/month/year) **See form PCT/ISA/210**

Applicant's or agent's file reference
0000055259

FOR FURTHER ACTION
See paragraph 2 below

International application No. PCT/EP2005/000257	International filing date (day/month/year) 13.01.2005	Priority date (day/month/year) 15.01.2004
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International Patent Classification (IPC) or both national classification and IPC
A01N43/90

Applicant
BASF Aktiengesellschaft

1. This opinion contains indications relating to the following items:

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|-------------------------------------|--------------|--|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the opinion |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP	Authorized officer
Facsimile No.	Telephone No.

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Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language
_____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	1-10	YES
	Claims		NO
Inventive step (IS)	Claims	1-10	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-10	YES
	Claims		NO
2. Citations and explanations:			
<p>Reference is made to the following prior art documents (D1-D7) which are cited in the international search report:</p> <p>D1: US-B1-6 268 371</p> <p>D2: WO 98/46607 A</p> <p>D3: YASUO YAMADA: "MONCEREN® (Pencycuron) a New Fungicide", JAPAN PESTICIDE INFORMATION, JAPAN PLANT PROTECTION ASSOCIATION, TOKYO, JP, No. 48, 1986, pages 16-22, ISSN: 0368-265X</p> <p>D4: EP-A-0 988 790</p> <p>D5: US-A-5 593 996</p> <p>D6: WO 99/48365 A</p> <p>D7: DATABASE WPI Section Ch, Week 198734 Derwent Publications Ltd., London, GB; Class C01, AN 1987-238749 & JP 62 161704 A</p> <p>Novelty</p> <p>The present application meets the requirement of PCT Article 33(1) in conjunction with PCT Article 33(2) because the subject matter of claims 1-10 is novel.</p> <p>The subject matter of independent claim 1 is a fungicidal</p>			

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citations and explanations supporting such statement

mixture of pencycuron and a specific fungicidal triazolopyrimidine (hereinbelow referred to as TP1) in a synergistical effective amount. The remaining independent claims 4, 9 and 10 relate to a method of controlling rice-pathogenic harmful fungi by means of such a mixture, to seed resulting from such a method which comprises such a mixture, and to the use of the two compounds for the preparation of compositions for controlling rice-pathogenic harmful fungi.

D1 (see the passages cited in the international search report) discloses synergistic mixtures of triazolopyrimidines, which are known, *inter alia*, from D4, with melanin biosynthesis inhibitors such as carpropamide, pyroquilon and fenoxanil. These mixtures are particularly effective against rice pathogens (*Pyricularia oryzae*, *Rhizoctonia solani* and *Cochliobolus miyabeanus*, which causes brown spot disease of rice). The preferred triazolopyrimidines, which are referred to as azolopyrimidines A, C and D in D1 (hereinbelow referred to as TPa, TPb and TPC, respectively) are the 6-(2-Cl-6-F-phenyl), the 7-(2,2,2-trifluoroethylamino) and the 7-(1,1,1-trifluoropropyl-2-ylamino) analogue of TP1.

D2 (see the passages cited in the international search report) discloses, *inter alia*, specifically the compound TP1 (exemplary compound 2). The compound is compared with TPa with regard to its activity against Powdery Mildew on grapevines and found to be superior. The possibility of a mixture with other fungicides, amongst which pencycuron is also mentioned, with the possibility of achieving a

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synergistic effect is mentioned, but not carried out.

D3 (see the passages cited in the international search report) discloses that pencycuron is highly effective against *Rhizoctonia solani* (*Corticium sasakii*, perfect stage: *Thanatephorus cucumeris*) on rice, but also that it is extraordinarily specific in this respect and barely effective against *Pyricularia oryzae*.

D4 (see the passages cited in the international search report) discloses synergistic mixtures of triazolopyrimidines of general formula which also covers TP1 with 22 other fungicides or classes of fungicides which do not include pencycuron, however. The preferred azolopyrimidines A, B and C, which are also used in examples, are the abovementioned TPa, TPb and TPc, respectively.

D5 (see the passages cited in the international search report) discloses certain fungicidal triazolopyrimidines, including TPa. The activity against *Pyricularia oryzae* on rice is demonstrated (see D5, examples 225 and 226).

D6 (see the passages cited in the international search report) discloses mixtures of oxime ether strobilurins such as, for example, the rice fungicide orysastrobin, with various fungicides which are active against *Rhizoctonia*, including pencycuron. The mixtures prove to be synergistically active against *Pyricularia oryzae*.

Finally, D7 (see the passages cited in the international search report) discloses mixtures of

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cyclopropanecarboxamides such as, for example, carpropamide, which demonstrate good activity against *Pyricularia oryzae*, but only a low level of activity against *Pellicularia sasakii* (anamorph *Rhizoctonia solani*) with pencycuron. The mixture shows a synergistic effect and a broader fungicidal spectrum.

Thus, none of the abovementioned citations discloses the specific mixture which is the subject matter of the present application.

Inventive step

The present application meets the requirements of PCT Article 33(1) in conjunction with PCT Article 33(3) because the subject matter of claims 1-10 involves an inventive step.

In the light of the description and the closest prior art of the cited prior art document D1, the problem addressed by the present application can therefore be considered that of providing synergistic mixtures of triazolopyrimidines with other fungicides which are suitable for the control of rice pathogens, i.e. which combine a high degree of systemicity with a good efficacy against *Pyricularia oryzae* and *Rhizoctonia solani*.

The solution proposed is characterized by the use of the specific triazolopyrimidine TP1 in combination with pencycuron.

To address the same problem, the closest prior art D1 proposes (see above) certain 2,4,6-trifluorophenyl-

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triazolopyrimidines in combination with known melanin biosynthesis inhibitors.

The problem proposed in the present application differs both with regard to the triazolopyrimidine chosen (TP1) and with regard to the mixing partner chosen (pencycuron).

It is known from D2 that TP1 and similar triazolopyrimidines have a very good activity against the rice pathogens *Pyricularia grisea f. sp. oryzae* (teleomorph: *Magnaporthe gr. f. sp. oryzae*) and *Rhizoctonia solani*. Reference is made to the cited prior art document D5 as an earlier publication of this general class of substances, and it is noted that the compounds selected in D2 have an increased systemicity and activity against rice diseases, obviously in comparison with the compounds mentioned specifically in D5. Moreover, there is proposed a mixture with other fungicides which might possibly lead to a synergistic effect.

D4 discloses mixtures of triazolopyrimidines of a general formula which encompasses not only TPa, TPb and TPC, but also TP1, with other fungicides (see above). However, only TPa, TPb and TPC which are known from cited prior art documents D1 and D5, are actually used, and pencycuron is not among the chosen mixing partners. The synergistic mixtures are tested against a number of harmful fungi, such as species from the genera *Blumeria*, *Botrytis*, *Septoria*, *Erysiphe* and *Puccinia*, but not against one of the typical rice pathogens. Also, the tests are carried out on various crop plants such as

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wheat, barley, apple, cucumbers, tomatoes and grapevines, but not rice.

The fact that pencycuron is active against rice-pathogenic fungi and in particular against *Rhizoctonia solani* was known from the prior art (D3, see above).

However, mixing partners for pencycuron which are proposed in the prior art are strobilurins such as orysastrobin (D6) or melanin biosynthesis inhibitors such as carpropamide (D7).

In the light of this prior art, it was no obvious measure proceeding from D1 to replace TPa, TPb or TPC in the mixtures disclosed therein by TP1 and simultaneously to replace the melanin biosynthesis inhibitors by pencycuron, which has a completely different structure, or, on the other hand, proceeding from D6 or D7, to replace the strobilurins or melanin biosynthesis inhibitors by TP1, which has a completely different structure.

Even less would a person skilled in the art have expected that such a mixture would also show a synergistic effect against *Pyricularia oryzae*, as is demonstrated in the present application.

The proposed solution is therefore not obvious but involves an inventive step.

Industrial applicability

The subject matter of claims 1-10 is considered to be

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industrially applicable (PCT Article 33(1) and (4)).